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Report Summary:

<u> Highlights</u>	<u>January 1, 2013</u>	<u>January 1, 2015</u>	
Contributions			
Funding Schedule FY 2016	\$16,233,644	\$16,233,644	
Funding Schedule FY 2017	16,755,514	16,733,644	
Funded Ratios			
GAS No. 25	50.9%	55.9%	
<u>Participants</u>			
Actives	887	898	
Retirees and Beneficiaries	665	666	
Inactives	111	130	
Disabled	<u>108</u>	<u>105</u>	
Total	1,771	1,799	
<u>Payroll</u>			
Payroll of Active Members	\$50,696,522	\$55,578,341	
Average Payroll	57,155	61,891	
Normal Cost			
Employer	\$2,466,332	\$2,398,277	
Employee	4,358,276	4,888,985	
Administrative Expenses	<u>500,000</u>	<u>525,000</u>	
Total	\$7,324,608	\$7,812,262	
Actuarial Accrued Liabilities			
Actives	\$135,739,309	\$148,521,634	
Retirees, Beneficiaries, Disabilities and Inactives	188,369,884	200,558,579	
Total	\$324,109,193	\$349,080,213	
Actuarial Value of Assets	165,040,789	195,155,759	
Unfunded Actuarial Accrued Liabilities	\$159,068,404	\$153,924,454	

Introduction

This report presents the findings of an actuarial valuation as of January 1, 2015, of Waltham Contributory Retirement System.

The actuarial valuation is based on:

- Provisions Chapter 32 of the Massachusetts General Laws, "M.G.L", as of January 1, 2015.
- Employee data provided by the Retirement Board
- Asset information reported to the Public Employee Retirement Administration Commission by the City of Waltham Contributory Retirement System
- Actuarial assumptions approved by the Retirement Board

The valuation and appropriation forecast are prepared in accordance with Chapter 32 of the M.G.L. as of January 1, 2015.

The valuation and forecast do not account for:

- Any subsequent changes in the law
- Chapter 32 of the M.G.L., Section 3(8)(c) transfers between systems
- State-mandated benefits
- Cost-of-living increases granted to retired members between 1982 and 1997. The
 cost of these benefits has been assumed by the State under Proposition Two and
 One-Half.

Actuarial Experience

In performing the actuarial valuation, various assumptions are made regarding such factors as mortality, retirement, disability, and withdrawal rates as well as both payroll, salary increases, and investment returns. A comparison of the current valuation and the prior valuation is made to determine how closely actual experience corresponded to anticipated occurrences. This analysis of the system provides insight into the overall quality of the actuarial assumptions and helps explain any change in the annual appropriation.

During the last two years, the total unfunded actuarial accrued liability decreased by 3.2% to \$153,924,454. The decrease is the result of net unfavorable actuarial experience during the preceding years and actuarial assumption changes. The sources of actuarial (gains) and losses are as follows:

Assets	(14,751,324)
Salary Increases	4,055,868
New Participants	1,414,364
Active - Retirements	291,413
Active - Terminations	1,101,949
Active - Mortality	258,562
Active - Disabilities	(303,584)
Inactive - Mortality and data adjustments	1,381,667
Other, includes data adjustments, buybacks, interest on ASF	<u>268,179</u>
Total Actuarial (Gain) / Loss	(6,282,906)

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Actuarial Costs and Liabilities:

Normal Costs

The normal cost is the sum of the individual normal costs determined for each member as if the assumptions underlying the cost determinations had been exactly realized. An individual normal cost represents that part of the cost of a member's future benefits which are assigned to the current year as if the costs are to remain level as a percentage of the member's pay. Benefits payable under all circumstances (i.e., retirement, death, disability and terminations) are included in this calculation. Anticipated employee contributions to be made during the year are subtracted from the total normal cost to determine employer normal cost. The total normal cost is divided by total payroll to determine the normal cost as a percent of pay. The normal cost is shown in Table I.

Та	ble I	
	<u>January 1, 2013</u>	January 1, 2015
Superannuation	\$4,366,232	\$4,663,469
Termination	682,182	734,680
Death	280,850	304,788
Disability	1,495,344	1,584,325
Administrative Expenses	<u>\$500,000</u>	\$525,000
Total Normal Cost	\$7,324,608	\$7,812,262
% of Pay	14.4%	14.1%
Employee Contributions	\$4,358,276	\$4,888,985
% of Pay	8.6%	8.8%
Employer Normal Cost	\$2,966,332	\$2,923,277
% of Pay	5.9%	5.3%

Present Value of Actuarial Accrued Liabilities

The actuarial accrued liabilities (AAL) represents today's value of all benefits based on the past service of the actives and inactives. The AAL can be compared to the assets to determine the funded status of the Plan. The value of these earned benefits is shown in Table II below.

Table II		
	<u>January 1, 2013</u>	January 1, 2015
Actives		
Superannuations	\$125,755,115	\$137,919,021
Termination	(2,336,117)	(2,456,381)
Death	3,475,289	3,819,017
Disability	8,845,022	9,239,977
Retirees and Inactives		
Retirees and Beneficiaries	\$155,237,442	\$164,654,964
Terminated (Refund)	1,071,383	1,209,287
Disabled	32,061,059	34,694,328
Total	\$324,109,193	\$349,080,213

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Present Value of Future Benefits

The present value of future benefits represents today's value of all benefits earned by the inactive participants as well as all benefits earned and expected to be earned in the coming years by the active participants. The difference between the present value of future benefits and the present value of actuarial accrued liabilities is the value of benefits to be earned in the coming years. The value of the total expected benefits is shown in Table III.

Tab	ole III	
	<u>January 1, 2013</u>	January 1, 2015
Actives		
Superannuation	\$159,149,095	\$173,069,514
Termination	3,049,388	3,256,864
Death	5,635,457	6,153,100
Disability	21,844,702	22,837,017
Retirees and Inactives		
Retirees and Beneficiaries	\$155,237,442	\$164,654,964
Terminated (Refund)	1,071,383	1,209,287
Disabled	32,061,059	34,694,328
Total	\$378,048,526	\$405,875,074

Funded Status and Appropriations:

Market Value of Plan Assets

The trust fund composition on a market value basis is shown in Table IV.

Ta	able IV	
	<u>January 1, 2013</u>	<u>January 1, 2015</u>
Cash equivalents	\$2,159,042	\$3,279,572
Fixed income securities	0	0
Equities	0	0
International	0	0
Real Estate	10,054,542	10,333,994
Other	6,874,599	4,291,607
PRIT Fund	147,992,180	184,410,213
Accounts receivable	57,562	33,308
Accounts payable	(11,453)	(19,930)
Accrued income	<u>189</u>	<u>0</u>
Total Market Value	\$167,126,661	\$202,328,764
Total Actuarial Value	\$165,040,789	\$195,155,759

Actuarial Value of Assets

The actuarial value of assets is determined by projecting the market value of assets as of the beginning of the prior plan year with the assumed rate of return during that year (8.25%) and accounting for deposits and disbursements with interest at the assumed rate of return. An adjustment is then applied to recognize the difference between the actual investment return and expected return over a five year period. This preliminary actuarial value is not allowed to differ from the market value of assets by more than 20%. The calculation of the actuarial value of assets as of January 1, 2015 is presented in Table V.

Table V

(1) (2) (3) (4) (5)	Market value at January 1, 2014 2014 Contributions 2014 Payments Net interest adjustment at 8.25% on (1), (2) and (3) to December 31, 2014 Expected market value on January 1, 2015 (1) + (2) + (3) + (4)	January 1, 2015 \$189,198,963 \$22,069,538 (\$24,472,798) \$15,509,780 \$202,305,483
	(1) + (2) + (3) + (4)	
(6)	Actual market value on January 1, 2015	\$202,328,764
(7)	2014 (Gain) / Loss	(\$23,281)
(8)	80% of 2014 (Gain) / Loss	(\$18,625)
(9)	2013 (Gain) / Loss	(\$10,875,609)
(10)	60% of 2013 (Gain) / Loss	(\$6,525,365)
(11)	2012 (Gain) / Loss	(\$7,141,959)
(12)	40% of 2012 (Gain) / Loss	(\$2,856,784)
(13)	2011 (Gain) / Loss	\$11,138,845
(14)	20% of 2011 (Gain) / Loss	\$2,227,769
(15)	Actuarial value on January 1, 2015, $(6) + (8) + (10) + (12) + (14)$	
	but not less than 80% nor greater than 120% of (6)	\$195,155,759
(16)	Ratio of actuarial value to market value	96.45%
(17)	Actuarial Value Return for 2013	10.17%
(18)	Actuarial Value Return for 2014	10.30%
(19)	Market Value Return for 2013	14.81%
(20)	Market Value Return for 2014	8.26%

Unfunded Actuarial Accrued Liabilities

Under the Entry Age Normal Actuarial Cost Method, the Actuarial Accrued Liability represents what the accumulated assets would have been as of the valuation date if:

- current plan provisions and assumptions had always been in effect,
- experience conformed exactly to assumptions, and
- the normal cost had been contributed each year since inception.

The actuarial value of the Fund's assets as of the end of the prior year are subtracted from the Actuarial Accrued Liability (AAL) to determine the Unfunded Actuarial Accrued Liability (UAAL) as of the valuation date. Over time, annual pension contributions will accumulate Plan assets equal to the AAL, and the UAAL will be eliminated. Thereafter, annual contributions equal to the normal cost will keep the Plan's assets and liabilities in balance. The UAAL is developed in Table VI.

	Table VI		
		<u>January 1, 2013</u>	<u>January 1, 2015</u>
Actuarial Accrued Liability		\$324,109,193	\$349,080,213
Actuarial Assets		165,040,789	195,155,759
Unfunded Actuarial Accrued Liability		\$159,068,404	\$153,924,454
Funded Status		50.9%	55.9%

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Appropriations

The pension appropriation for the upcoming fiscal years have been calculated in accordance with the requirements set forth in Sections 22D and 22F of Chapter 32 of the Massachusetts General Laws. These amounts were calculated to comply with the June 30, 2040, full funding mandate for all accrued liabilities. The pension appropriation is the sum of the:

- Employer normal cost,
- Increasing amortization of the unfunded actuarial accrued liability by June 30, 2034 \$ 148,936,705 over 18 years with increasing payments
- Level amortization of the 2002 Early Retirement Incentive by June 30, 2018 \$2,883,480 over 3 years
- Level amortization of the 2011 Early Retirement Incentive by June 30, 2021 \$2,104,269 over 6 years
- Interest adjustment for payments deposited at the beginning of the fiscal year.

The Board decided to have each appropriation \$500,000 greater than the previous. The pension appropriation is shown in Table VII.

Table VII		
	January 1, 2013	January 1, 2015
Normal cost	\$2,966,332	\$2,923,277
Amortization payment of the accrued liability	10,188,987	10,974,858
Amortization payment of 2002 ERI liability	1,038,280	1,038,280
Amortization payment of 2011 ERI liability	423,689	423,689
Total cost	\$14,617,288	\$15,360,104
% of Pay	28.8%	27.6%
Fiscal 2016 cost	\$16,233,644	\$16,233,644
Fiscal 2017 cost	\$16,755,514	\$16,733,644

Appropriation Forecast

The following exhibit forecasts employer and employee contributions over the next 32 years under the adopted funding schedule.

Note that the forecast is based upon an "open group" method. This method assumes that sufficient employees will be hired each year to keep the number constant. The total payroll of the system is expected to increase 4.0% per year. The employee contribution rate is expected to increase to 10.5% by 2036 as members contributing base percentages 5%, 7%, and 8% are replaced by new members, whose base contribution is 9%. Payments are assumed to be made at the beginning of the year.

The employer total cost is expected to increase through 2033 until the unfunded liabilities are completely paid off, at which time only the normal cost will remain. The total cost represents 29.1% of payroll, decreasing to 24.5% by the time the unfunded liabilities are fully paid off, leaving only a normal cost of 3.7% thereafter. The decrease in the cost as a percentage of payroll is a result of the increase in member deductions.

Appropriation Forecast

Fiscal		Employer	Amortization	Employer	Employer		
Year	Employee	Normal Cost	Payments	Total Cost	Total Cost	Unfunded	Funded
Ending	Contribution	with Interest	with Interest	with Interest	% of Payroll	Liability**	Ratio %**
2016	\$4,888,985	\$3,041,473	\$13,192,171	\$16,233,644	29.2	\$153,671,963	56.0
2017	5,109,093	3,096,949	13,636,695	16,733,644	29.1	152,613,713	57.7
2018	5,338,620	3,152,584	14,081,060	17,233,644	28.9	151,006,174	59.6
2019	5,577,955	3,208,319	14,525,325	17,733,644	28.8	148,813,790	61.5
2020	5,827,504	3,264,093	14,969,551	18,233,644	28.6	145,978,306	63.6
2021	6,087,688	3,319,842	15,413,802	18,733,644	28.4	142,446,707	65.7
2022	6,358,947	3,375,494	15,858,150	19,233,644	28.2	138,161,538	67.9
2023	6,641,736	3,430,975	16,302,669	19,733,644	27.9	133,060,529	70.2
2024	6,936,530	3,486,205	16,747,439	20,233,644	27.6	127,076,194	72.5
2025	7,243,824	3,541,099	17,192,545	20,733,644	27.4	120,135,399	74.9
2026	7,564,132	3,595,564	17,638,080	21,233,644	27.1	112,158,885	77.4
2027	7,897,987	3,649,503	18,084,141	21,733,644	26.8	103,060,760	80.0
2028	8,245,946	3,702,814	18,530,830	22,233,644	26.5	92,747,942	82.6
2029	8,608,587	3,755,386	18,978,258	22,733,644	26.2	81,119,568	85.3
2030	8,986,512	3,807,103	19,426,541	23,233,644	25.8	68,066,334	88.1
2031	9,380,346	3,857,839	19,875,805	23,733,644	25.5	53,469,800	91.0
2032	9,790,740	3,907,462	20,326,182	24,233,644	25.1	37,201,623	94.0
2033	10,218,371	3,955,834	19,895,916	23,851,750	23.9	19,122,734	97.0
2034	10,663,942	4,002,805	0	4,002,805	3.9	0	100.0
2035	11,128,185	4,048,218	0	4,048,218	3.8	(0)	100.0
2036	11,611,862	4,091,907	0	4,091,907	3.7	0	100.0
2037	12,018,277	4,235,123	0	4,235,123	3.7	0	100.0
2038	12,438,917	4,383,353	0	4,383,353	3.7	0	100.0
2039	12,874,279	4,536,770	0	4,536,770	3.7	0	100.0
2040	13,324,879	4,695,557	0	4,695,557	3.7	0	100.0
2041	13,791,250	4,859,902	0	4,859,902	3.7	0	100.0
2042	14,273,943	5,029,998	0	5,029,998	3.7	0	100.0
2043	14,773,532	5,206,048	0	5,206,048	3.7	0	100.0
2044	15,290,605	5,388,260	0	5,388,260	3.7	0	100.0
2045	15,825,776	5,576,849	0	5,576,849	3.7	0	100.0
2046	16,379,678	5,772,038	0	5,772,038	3.7	0	100.0
2047	16,952,967	5,974,060	0	5,974,060	3.7	0	100.0

^{**} Beginning of Fiscal Year

GASB Statements No. 25 and No. 27

Effective for periods beginning after June 15, 1997, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 25 and 27. These statements, which replace GASB Statement No. 5, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

Footnote disclosures required by GASB Statement No. 25 and 27 include a description of the plan, a summary of significant accounting policies, and information about contributions, legally required reserves, and investment concentrations. As a result of the oversight of the Public Employees Retirement Administration Commission (PERAC) and the conversion of unpaid contributions to pension related debt, the Net Pension Obligation (NPO) as required by Statement No. 27 will effectively always be equal to \$0. The required disclosure information is shown in Table VIII.

Table VIII				
		<u>January 1, 2013</u>	January 1, 2015	
(1)	Actuarial Accrued Liability	\$324,109,193	\$349,080,213	
(2)	Actuarial Value of Assets	165,040,789	195,155,759	
(3)	Unfunded Actuarial Accrued Liability	\$159,068,404	\$153,924,454	
(4)	Funded Ratio: (2)/(1)	50.9%	55.9%	
(5)	Covered Payroll	\$50,696,522	\$55,578,341	
(6)	UAAL as a percentage of payroll: (3)/(5)	313.8%	277.0%	
(7)	Annual Required Contribution (ARC)	\$13,877,398	\$16,233,644	
(8)	Net Pension Obligation	\$0	\$0	

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PERAC Annual Statement APPENDIX PAGE 3 ACTUARIAL VALUATION AND ASSUMPTIONS

The most recent actuarial valuation of the System was prepared by Sherman Actuarial Services as of January 1, 2015.

The normal cost for employees on that date was:	\$4,888,985	8.8% of pay
The normal cost for the employer was:	2,398,277	4.3% of pay
The actuarial liability for active members was:		\$148,521,634
The actuarial liability for retired and inactive members was:		200,558,579
Total actuarial accrued liability:		349,080,213
System assets as of that date:		195,155,759
Unfunded actuarial accrued liability:		\$153,924,454
The ratio of system's assets to total actuarial liability was		55.9%
The principal actuarial assumptions used in the valuation are as follows:		
The principal actuarial assumptions used in the valuation are as follows.		
Investment Return:		8.25%
Rate of Salary Increase:		3.5%
•		

SCHEDULE OF FUNDING PROGRESS

Actuarial Valuation Date	Actuarial Value of Assets	Actuarial Accrued Liability	Unfunded Actuarial Accrued Liability	Funded Ratio	Covered Payroll	UAAL as a percent of Covered Payroll
	(a)	(b)	(b-a)	(a/b)	(c)	(b-a)/c
01/01/15	\$195,155,759	\$349,080,213	\$153,924,454	55.9%	\$55,578,341	277.0%
01/01/13	165,040,789	324,109,193	159,068,404	50.9%	50,696,522	313.8%
01/01/11	168,017,364	301,356,797	133,339,433	55.8%	48,493,764	275.0%
01/01/10	160,564,692	279,108,340	118,543,648	57.5%	47,443,385	249.9%
01/01/08	161,934,253	251,353,888	89,419,635	64.4%	45,141,147	198.1%
01/01/06	136,645,912	267,164,850	130,518,938	51.1%	43,804,722	298.0%
01/01/05	132,657,305	252,142,463	119,485,158	52.6%	42,282,485	282.6%
01/01/04	132,381,882	241,741,616	109,359,734	54.8%	40,324,076	271.2%
01/01/03	123,352,105	232,487,351	109,135,246	53.1%	38,317,908	284.8%
01/01/01	123,997,853	196,626,146	72,628,293	63.1%	38,264,636	189.8%

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GASB Statements No. 67 and No. 68

Effective for periods beginning after June 15, 2013, the Governmental Accounting Standards Board (GASB) requires the disclosure of pension related liabilities for public employer financial statements in accordance with Statements 67 and 68. These statements, which amend GASB Statements No. 25 and No. 27, must be adhered to by any public employee retirement system that follows Generally Accepted Accounting Principles (GAAP).

These disclosures are intended to establish a reporting framework that distinguishes between:

- current financial information about plan assets and financial activities,
- actuarially determined information from a long-term perspective,
- the funded status of the plan, and
- progress being made in accumulating sufficient assets to pay benefits when due.

The statement requires the system to present two financial statements – a statement of fiduciary net position and a statement of changes in fiduciary net position. The statement of fiduciary net position presents the following items as of the end of the plan's reporting period, as applicable:

- Assets
- Deferred outflows of resources (consumption of net assets by the employers that is applicable to a future reporting period)
- Liabilities
- Deferred inflows of resources (acquisition of net assets by the employers that is applicable to a future reporting period)
- Fiduciary net position (Assets + Deferred outflows Liabilities Deferred inflows)

The system is considered a cost-sharing multiple-employer pension plan since pension obligations exist for employees of more than one employer and plan assets can be used to pay the benefits of the employees of any employer.

This report does not include all items required under GASB Statements No. 67 and No. 68. Rather, it provides all items required that are not readily available from other sources such as the Annual Statement of the Financial Condition prepared by the Board, Chapter 32 of the Massachusetts General Laws and investment reports prepared by the plan's investment consultant.

Discount Rate

The discount rate, and all other actuarial assumptions, are the as those described in Exhibit 6. The discount rate was selected based on a projection of employer and employee contributions, benefit payments, expenses and the long term expected rate of return on trust assets. Under Chapter 32 of the Massachusetts Laws, employers are required to make the necessary contributions to the trust such that the plan reaches a full funding status by 2040. In addition, Chapter 32 also gives the Retirement Board the right to go directly to the Assessors of the community and add an additional property tax to bills for amounts not paid by employer.

Based on these laws and assumptions, the pensions plan's Fiduciary Net Position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

The Board selected 8.25% as the long term expectation of investment returns. The average return for the 30 years ending as of December 31, 2014 was 8.84%. The average return for the past 5 years ending December 31, 2014 was 10.00%.

Assets

The Net Position Restricted for Pensions, shown in page 7, is \$202,328,764. The 2014 Annual Statement of the Financial Condition contains the values for previous years and the changes in Net Position Restricted for Pensions. Investments are reported at fair value.

Net Pension Liability as of December 31, 2014 – GASB Statement No. 67

The following presents the net pension liability of the system calculated using the discount rate of 8.25%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.25%) or 1-percentage-point higher (9.25%) than the current rate:

	1% Decrease (7.25%)	Current Discount Rate (8.25%)	1% Increase (9.25%)
Total Pension Liability	\$ 384,302,950	\$ 349,080,213	\$ 318,781,812
Plan Fiduciary Net Position	\$ 202,328,764	\$ 202,328,764	\$ 202,328,764
Net Pension Liability	\$ 185,453,019	\$ 146,751,449	\$ 112,793,827

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 58.0%.

Net Pension Liability as of June 30, 2015 – GASB Statement No. 68

The following presents the net pension liability of the system calculated using the discount rate of 8.25%, as well as what the system's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (7.25%) or 1-percentage-point higher (9.25%) than the current rate:

	1% Decrease (7.25%)	Current Discount Rate (8.25%)	1% Increase (9.25%)
Total Pension Liability	\$ 390,452,181	\$ 354,849,487	\$ 324,213,092
Plan Fiduciary Net Position*	\$ 209,759,729	\$ 209,759,729	\$ 209,759,729
Net Pension Liability	\$ 180,692,452	\$ 145,089,758	\$ 114,453,363

^{*}Estimated

The Plan Fiduciary Net Position as a percentage of the Total Pension Liability is 59.1%.

Schedules of Required Supplementary Information

	<u>2014</u>
Total Pension Liability – Beginning	n/a
Total Pension Liability – Ending (a)	\$ 349,080,213
Plan Fiduciary Net Position – Beginning	n/a
Plan Fiduciary Net Position – Ending (b)	\$ 202,328,764
Net Pension Liability – Ending (a) – (b)	\$ 146,751,449
Plan Fiduciary Net Positions as a percentage	
of the Total Pension Liability	58.0%
Covered-employee payroll	\$ 55,578,341
Net Pension Liability as a percentage of	
Covered-employee Payroll	264.0%

EXHIBITS

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Age/Service Distribution with Salary as of January 1, 2015

Attained Age	Average Salary <5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
< 20	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0
20-24	28	0	0	0	0	0	0	0	0	28
	34,786	0	0	0	0	0	0	0	0	34,786
25-29	42	5	0	0	0	0	0	0	0	47
	46,366	39,644	0	0	0	0	0	0	0	45,651
30-34	33	22	8	0	0	0	0	0	0	63
	49,066	63,133	66,224	0	0	0	0	0	0	56,157
35-39	18	14	36	14	0	0	0	0	0	82
	46,415	64,419	72,893	79,971	0	0	0	0	0	66,842
40-44	20	11	19	35	7	0	0	0	0	92
	37,734	43,750	66,183	76,151	72,656	0	0	0	0	61,601
45-49	35	20	29	30	28	17	0	0	0	159
	40,993	42,216	55,625	70,033	74,162	81,705	0	0	0	59,489
50-54	17	25	33	24	22	44	6	0	0	171
	37,667	42,107	46,317	70,802	83,940	77,085	80,593	0	0	62,238
55-59	12	14	22	22	12	33	13	4	1	133
	41,488	52,018	49,365	59,770	63,237	75,747	91,613	93,386	63,708	64,013
60-64	5	12	18	11	10	8	11	5	0	80
	34,029	44,216	53,386	50,984	63,454	54,752	86,032	107,982	#DIV/0!	59,766
65-69	0	3	7	8	6	3	3	1	0	31
	0	41,066	61,188	62,422	46,607	39,744	61,705	98,770	#DIV/0!	55,924
70+	0	0	1	2	3	3	0	0	3	12
	0	#DIV/0!	46,274	65,686	96,863	37,521	0	#DIV/0!	60,704	63,576
Total Employees		126	173	146	88	108	33	10	4	898
Average Salary	42,256	#DIV/0!	58,235	69,121	72,675	73,613	85,030	#DIV/0!	#DIV/0!	59,798

Retiree Distribution as of January 1, 2015

	Number of Employees			Tota		
Attained Age	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	1	1	0	1,923	1,923
30-34	0	0	0	0	0	1,923
35-39	0	0	0	0	0	0
40-44	0	2	2	0	59,062	59,062
45-49	1	3	4	2,552	50,862	53,414
50-54	4	8	12	25,304	183,210	208,514
55-59	17	26	43	259,127	819,790	1,078,917
60-64	22	60	82	605,083	2,536,335	3,141,419
65-69	42	84	126	716,150	4,022,645	4,738,795
70-74	37	57	94	749,187	2,434,554	3,183,741
75-79	31	53	84	556,969	1,684,353	2,241,321
80-84	38	45	83	487,238	1,273,364	1,760,602
85-89	26	47	73	358,957	1,211,935	1,570,891
90-94	23	24	47	274,248	426,016	700,264
95+	6	9	15	91,555	101,006	192,561
	247	419	666	4,126,369	14,805,055	18,931,424
rage (Age/Payment)	74	74	74	16,706	35,334	28,426
uency Percent	37.1	62.9	100	21.8	78.2	100

Disabled Retiree Distribution as of January 1, 2015

	Number of Employees			Total		
Attained Age	Female	Male	Total	Female	Male	Total
< 20	0	0	0	0	0	0
20-24	0	0	0	0	0	0
25-29	0	0	0	0	0	0
30-34	0	0	0	0	0	0
35-39	0	0	0	0	0	0
40-44	0	1	1	0	36,194	36,194
45-49	0	7	7	0	295,156	295,156
50-54	1	4	5	9,948	177,395	187,343
55-59	1	7	8	24,036	184,747	208,784
60-64	4	15	19	103,167	659,425	762,593
65-69	2	12	14	47,782	589,160	636,942
70-74	1	19	20	38,180	625,757	663,937
75-79	0	16	16	0	509,762	509,762
80-84	0	8	8	0	234,558	234,558
85-89	0	5	5	0	156,621	156,621
90-94	0	2	2	0	40,849	40,849
95-99	0	0	0	0	0	0
`otal	9	96	105	223,113	3,509,623	3,732,736
Average (Age/Payment)	63.52	69.06	68.58	24,790	36,559	35,550
Frequency Percent	8.6	91.4	100	6.0	94.0	100

EXHIBIT 4 - CASHFLOW FORECAST:

The following is a 30 year forecast of benefit payments net of state reimbursable COLA payments, Contribution Income and Investment Returns.

Plan Year Ending	Benefit Payments	Employee Contributions	Employer Contributions	Investment Returns	Net change in plan assets
2015	\$24,171,706	\$4,888,985	\$16,233,644	\$15,645,874	\$12,596,798
2016	23,987,401	5,109,093	16,733,644	16,710,533	14,565,869
2017	24,830,703	5,338,620	17,233,644	17,886,577	15,628,139
2018	25,669,136	5,577,955	17,733,644	19,160,652	16,803,115
2019	26,564,376	5,827,504	18,233,644	20,529,464	18,026,235
2020	27,490,423	6,087,688	18,733,644	21,998,041	19,328,950
2021	28,484,719	6,358,947	19,233,644	23,571,449	20,679,321
2022	29,499,937	6,641,736	19,733,644	25,255,541	22,130,984
2023	30,587,241	6,936,530	20,233,644	27,056,614	23,639,548
2024	31,638,225	7,243,824	20,733,644	28,983,758	25,323,001
2025	32,644,802	7,564,132	21,233,644	31,051,739	27,204,714
2026	33,683,402	7,897,987	21,733,644	33,273,837	29,222,066
2027	34,755,046	8,245,946	22,233,644	35,661,211	31,385,754
2028	35,860,785	8,608,587	22,733,644	38,225,905	33,707,351
2029	37,001,703	8,986,512	23,233,644	40,980,917	36,199,370
2030	38,178,919	9,380,346	23,733,644	43,940,277	38,875,348
2031	39,393,589	9,790,740	23,713,428	47,098,098	41,208,677
2032	40,646,903	10,218,371	24,413,191	50,476,221	44,460,879
2033	41,940,093	10,663,942	4,004,638	53,267,847	25,996,335
2034	43,274,425	11,128,185	4,048,218	55,361,710	27,263,688
2035	44,651,209	11,611,862	4,091,907	57,558,726	28,611,286
2036	46,071,796	12,018,277	4,235,123	59,861,461	30,043,065
2037	47,537,579	12,438,917	4,383,353	62,280,479	31,565,170
2038	49,049,997	12,874,279	4,536,770	64,823,178	33,184,231
2039	50,610,532	13,324,879	4,695,557	67,497,494	34,907,398
2040	52,220,716	13,791,250	4,859,902	70,311,952	36,742,389
2041	53,882,128	14,273,943	5,029,998	73,275,717	38,697,530
2042	55,596,398	14,773,532	5,206,048	76,398,633	40,781,814
2043	57,365,209	15,290,605	5,388,260	79,691,285	43,004,942
2044	58,864,551	15,825,776	5,576,849	83,178,230	45,716,303

EXHIBIT 5 – SUMMARY OF PLAN PROVISIONS:

This summary is prepared in accordance with Chapter 32 as of January 1, 2015, and does not take into account any subsequent changes.

1. Administration

Each of the 104 contributory retirement systems for public employees of the Commonwealth of Massachusetts are guided by the applicable provisions of Chapter 32 of the Massachusetts General Laws and other applicable statutes. Although these boards operate semi-independently, there is a uniform set of rules governing benefits, eligibility, contributions, financing, and accounting.

2. Participation

Participation is mandatory for all full-time employees whose employment commences prior to age 65. Eligibility with respect to part-time, professional, temporary, or intermittent employment is governed by the local board. Membership is optional for certain elected officials, State officials appointed by the Governor, and certain hospital interns.

There are four classes of membership as follows:

- (i) Group 1: Most general employees in State and local government
- (ii) Group 2: Certain specified hazardous duty positions
- (iii) Group 3: State police officers and inspectors
- (iv) Group 4: Local police officers, firefighters, and designated employees of the municipal light department.

For members in more than one group, participation will be proportional.

Chapter 176 of the Acts of 2011 created different plan provisions within these groups for those hired on or after April 2, 2012.

3. Salary

Salary is defined as gross regular compensation. Salary <u>does not</u> include bonuses, overtime, severance pay, unused sick leave credit, or other similar compensation.

4. Member Contributions

Member contributions vary depending upon date hired as follows:

Member					
Date of Hire	Contribution Rate				
Prior to 1975	5.0% of Salary				
1975 to 1983	7.0% of Salary				
1984 to 1996	8.0% of Salary				
1996 and Later plus	9.0% of Salary				
1979 and Later	2.0% of Salary in excess of \$30	0,000			

For Group 1 employees who become members on or after April 2, 2012, the Contribution Rate shall be 6% after the completion of 30 years of service.

5. Average Salary

Average salary is used to determine a participant's benefit. It is defined as the average salary during the three consecutive-year period that produces the highest average. (Alternatively, if a greater amount results, it is the average rate of salary earned during the period or periods, whether or not consecutive, that constitutes the last three years preceding retirement.). For employees who become members on or after April 2, 2012, the averaging period shall be five years.

6. <u>Creditable Service</u>

In general, creditable service is awarded during the period in which a member contributes to the retirement system.

7. Service Retirement

a. Eligibility:

For an employee to be eligible for service retirement (also referred to as superannuation), one of the following conditions must be met:

- (i) completion of 20 years of service
- (ii) for an employee hired prior to January 1, 1978, attainment of age 55 as an active member
- (iii) for an employee hired on or after January 1, 1978, attainment of age 55 as an active member and completion of ten years of service
- (iv) for a Group 1 employee hired on or after April 2, 2012, attainment of age 60 and completion of ten years of service

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b. Benefit Amount:

The retirement allowance is determined as a product of the participant's Benefit Rate times Average Salary times Creditable Service, where Benefit Rate is determined from the following table for those hired prior to April 2, 2012:

Age at	Percentage of Average Salary					
<u>Retirement</u>	Group 1	Group 2	Group 4			
ć .	005	025	005			
65 or Over	.025	.025	.025			
64	.024	.025	.025			
63	.023	.025	.025			
62	.022	.025	.025			
61	.021	.025	.025			
60	.020	.025	.025			
59	.019	.024	.025			
58	.018	.023	.025			
57	.017	.022	.025			
56	.016	.021	.025			
55	.015	.020	.025			
54	.014	.014	.024			
53	.013	.013	.023			
52	.012	.012	.022			
51	.011	.011	.021			
~0	0.1.0	0.1.0	000			
50	.010	.010	.020			
49	.009	.009	.019			
48	.008	.008	.018			
47	.007	.007	.017			
46	.006	.006	.016			
45	.005	.005	.015			
44	.004	.004	.004			
43	.003	.003	.003			
42	.002	.002	.002			
41	.001	.001	.001			

For those hired after April 1, 2012 who retire with less than 30 years of service, the following rates are applied:

Age at	Percentage of Average Salary					
<u>Retirement</u>	Group 1	Group 2	Group 4			
67 or Over	.0250	.0250	.0250			
66	.0235	.0250	.0250			
65	.0220	.0250	.0250			
64	.0205	.0250	.0250			
63	.0190	.0250	.0250			
62	.0175	.0250	.0250			
61	.0160	.0235	.0250			
60	.0145	.0220	.0250			
59		.0205	.0250			
58		.0190	.0250			
57		.0175	.0250			
56		.0160	.0235			
55		.0145	.0220			
54		.0143	.0225			
53			.0203			
33			.0190			
52			.0175			
51			.0160			
50			.0145			

For those hired after April 1, 2012 who retire with at least 30 years of service, the following rates are applied:

Age at	Percentage of Average Salary		
Retirement	Group 1	Group 2	Group 4
67 or Over	.02500	.02500	.02500
66	.02375	.02500	.02500
65	.02250	.02500	.02500
64	.02125	.02500	.02500
63	.02000	.02500	.02500
62	.01875	.02500	.02500
61	.01750	.02375	.02500
60	.01625	.02250	.02500
59		.02125	.02500
58		.02000	.02500
57		.01875	.02500
56		.01750	.02375
55		.01625	.02250
54			.02125
53			.02000
52			.01875
51			.01750
50			.01625

8. <u>Deferred Vested Retirement</u>

a. <u>Eligibility</u>:

A participant who has completed ten or more years of creditable service is eligible for a deferred vested retirement benefit. If termination is involuntary, the participant is vested after six years.

b. Benefit Amount:

The participant's accrued benefit is payable commencing at age 55, or may be deferred until later at the employee's option.

c. Refund of Contributions:

In lieu of the deferred pension benefit, a member may elect to receive a refund of their accumulated contributions. Members with ten or more years of service are entitled to 100% of the credited interest on their contributions. Members with five to ten years of service are entitled to 50% of the credited interest on their contributions. No credited interest is provided for members with less than five years of service.

9. Accidental Disability

a. Eligibility:

Participants are eligible for an accidental disability benefit, regardless of service or age, if they become permanently and totally incapacitated for further duty as a result of personal injury sustained while in the performance of duties.

b. Benefit Amount:

The accidental disability amount is 72% of annual salary plus \$450 per year for each child plus an additional annuity based upon accumulated Member Contributions with credited interest.

10. Ordinary Disability

a. Eligibility:

An ordinary disability occurs when a member becomes permanently and totally disabled due to sickness or injury that is not job related. In order to be eligible for an ordinary disability benefit, a member must have ten years of service (and be less than age 55 or age 60 if hired on or after April 2, 2012).

b. <u>Benefit Amount</u>:

The ordinary disability amount is equal to the accrued retirement benefit as if the member were age 55 (age 60 if hired on or after April 2, 2012). If the member was a veteran, the benefit is 50% of the member's final rate of Salary during the preceding 12 months, plus an annuity based upon accumulated Member Contributions plus credited interest. If the participant is over age 55 (age 60 if hired on or after April 2, 2012), he

will receive not less than the superannuation allowance to which he is entitled.

11. Survivor Benefits

a. Occupational Death:

The survivors of a member who dies due to an occupational injury will be entitled to a lump sum return of contributions plus a pension benefit equal to 72% of the participant's annual Salary.

b. Non-Occupational Death:

Upon the death of a member other than due to an occupational injury, the designated beneficiary will be entitled to a retirement benefit as if Option C had been elected with a minimum of \$250 per month to the surviving spouse, plus \$120 for the first child, plus \$90 for each additional child. If no beneficiary is designated and if the employee worked two years, and is married at least one year, the spouse may elect benefits. If there is no designated beneficiary or surviving spouse, then member contributions are returned. If there are dependent children but no surviving spouse, they may elect minimum survivor benefits of \$250 per month plus \$120 for the first child and \$90 for each additional child.

c. Refund of Contributions:

Upon the death of a member not entitled to survivor benefits, the beneficiary is entitled to a refund of all member contributions with interest.

12. <u>Cost-of-Living Increases</u>

In accordance with the adoption of Chapter 17 of the Acts of 1997, the granting of a cost-of-living adjustment will be determined by an annual vote by the Retirement Board. The amount of increase will be based upon the Consumer Price Index, limited to a maximum of 3.0%, beginning on July 1. All retirees, disabled retirees, and beneficiaries who have been receiving benefits payments for at least one year as of July 1 are eligible for the adjustment. The maximum amount of pension benefit subject to a COLA is \$14,000. All COLAs granted to members after 1981 and prior to July 1, 1998 are deemed to be an obligation of the State and are not the liability of the Retirement System.

13. Postretirement Death Benefits

Any benefits following the death of a member after retirement are based upon the form of benefit the participant elected at the time of retirement. There are three available forms as follows:

- (i) Option A Life annuity
- (ii) Option B Life annuity with death benefit equal to excess of member contributions plus credited interest to retirement over annuity benefit paid to member
- (iii) Option C Life annuity with 66-2/3% of benefit continued after death of member to designated joint annuitant

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EXHIBIT 6 – ACTUARIAL METHODS AND ASSUMPTIONS:

The actuarial cost method, factors, and assumptions used in determining cost estimates are presented below.

1. Member Data

The member data used in the determination of cost estimates consist of pertinent information with respect to the active, inactive, retired, and disabled members of the employer as supplied by the employer to the actuary.

2. Valuation Date

January 1, 2015.

3. Actuarial Cost Method

The costs of the Plan have been determined in accordance with the individual entry age normal actuarial cost method.

4. Rate of Investment Return

It is assumed that the assets of the fund will accumulate at a compound annual rate of 8.25% per annum. The rationale for the selection of this rate is based on past performance and future expectations. Since 1987 the fund has had an average return of 8.84%. The asset policy continues to have a high concentration in equities and equity like investments. The Board continues to take an aggressive posture in its investment allocations.

5. Salary Scale

It is assumed that salaries including longevity will increase at a rate of 3.5% per year. The rationale for this assumption is based on the history of City revenue and Proposition 2-1/2. The City is limited to how much it can raise in property tax revenue to 2.5% of the previous year's figure, plus new growth. This restriction limits the largest portion of the City's revenue to about 3% per year. By extension, payroll increases are limited by the growth in revenue. Over an employee's career, promotions are expected to add .5% to the increases.

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6. Cost-of-Living Increases

Cost-of-living increases have been assumed to be 3.0% of the lesser of the pension amount and \$14,000 per year. Under State law the increase is limited to 3% or CPI. The Board has always granted 3%.

7. Value of Investments

Assets held by the fund are valued at market value as reported by the Public Employees' Retirement Administration Commission (PERAC). The actuarial value of assets is determined using a five-year smoothing of asset returns greater than or less than the assumed rate of return.

8. Annual Rate of Withdrawal Prior to Retirement

Based on an analysis of experience, the assumed annual rates of withdrawal may best be illustrated by the following rates at the following ages:

<u>Service</u>	General <u>Employees</u>	Police and Fire Employees
0	0.1500	0.0150
10	0.0540	0.0150
20	0.0200	0.0000
30	0.0000	0.0000

9. Annual Rate of Mortality

It is assumed that both pre-retirement and post retirement mortality are represented by the RP-2000 Mortality Table for males and females, adjusted to 2015 with Scale AA. Mortality for disabled members is represented by the RP-2000 Mortality Table set forward two years for all disabled members.

10. Service Retirement

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired prior to April 2, 2012:

	Male General	Female General	Male and Female Police and Fire
Age	Employees	Employees	Employees
50	0.0100	0.0150	0.02000
51	0.0100	0.0150	0.02000
52	0.0100	0.0200	0.02000
53	0.0100	0.0250	0.05000
54	0.0200	0.0250	0.07500
55	0.0200	0.0550	0.15000
56	0.0250	0.0650	0.10000
57	0.0250	0.0650	0.10000
58	0.0500	0.0650	0.10000
59	0.0650	0.0650	0.15000
60	0.1200	0.0500	0.20000
61	0.2000	0.1300	0.20000
62	0.3000	0.1500	0.25000
63	0.2500	0.1250	0.25000
64	0.2200	0.1800	0.30000
65	0.4000	0.1500	1.00000
66	0.2500	0.2000	1.00000
67	0.2500	0.2000	1.00000
68	0.3000	0.2500	1.00000
69	0.3000	0.2000	1.00000
70	1.0000	1.0000	1.00000

Based on an analysis of experience, the assumed annual retirement rates are illustrated at the following ages for those hired on or after April 2, 2012:

	Male General	Female General	Male and Female Police and Fire
Age	Employees	Employees	Employees
50	0.0000	0.0000	0.0100
51	0.0000	0.0000	0.0100
52	0.0000	0.0000	0.0200
53	0.0000	0.0000	0.0200
54	0.0000	0.0000	0.0200
55	0.0000	0.0000	0.0500
56	0.0000	0.0000	0.0750
57	0.0000	0.0000	0.1500
58	0.0000	0.0000	0.1000
59	0.0000	0.0000	0.1000
60	0.0500	0.0650	0.1000
61	0.0650	0.0650	0.1500
62	0.2000	0.1500	0.2000
63	0.2000	0.1300	0.2000
64	0.3000	0.1500	0.3000
65	0.2500	0.1250	1.0000
66	0.2200	0.1800	1.0000
67	0.4000	0.2500	1.0000
68	0.3000	0.2000	1.0000
69	0.3000	0.2000	1.0000
70	1.0000	1.0000	1.0000

12. Annual Rate of Disability Prior to Retirement

Based on an analysis of experience, the assumed annual rates of disability may best be illustrated by the following probabilities at the following ages:

Attained <u>Age</u>	General <u>Employees</u>	Police and Fire Employees
20	0.0001	0.0010
30	0.0003	0.0030
40	0.0010	0.0030
50	0.0019	0.0125

In addition, it is assumed for the general employees that 45% of all disabilities are ordinary (55% are service connected). For police and fire employees, 10% of all disabilities are assumed to be ordinary (90% are service connected).

13. Family Composition

It is assumed that 80% of all members will be survived by a spouse and that females (males) are three years younger (older) than members.

14. Administrative Expenses

The normal cost is increased by an amount equal to the anticipated administrative expenses for the upcoming fiscal year. The amount for fiscal year 2014 is \$500,000 and is anticipated to increase at 3.5% per year.

EXHIBIT 7 – GLOSSARY OF TERMS:

This glossary summarizes the technical terms contained in this report.

1. Actuarial Accrued Liability

That portion of the Actuarial Present Value of plan benefits that is not provided for by future employer Normal Costs or employee contributions.

2. <u>Actuarial Assumptions</u>

Assumptions as to the occurrence of future events affecting the Retirement System such as:

- Rates of investment returns
- Increases in a member's salary
- Inflation
- The probability of mortality, turnover, disablement
- Retirement at each age and other relevant items

3. Actuarial Cost Method

A procedure for allocating the Actuarial Present Value of pension plan benefits between Normal Cost and Actuarial Accrued Liability.

4. Actuarial Present Value

The single sum amount required at the valuation date that is required to provide for anticipated future events based upon the terms of the plan and the Actuarial Assumptions.

5. Forecast

A projection of future benefit payments or contribution requirements based upon the terms of the plan, the current asset amounts, the Actuarial Assumptions, and additional assumptions as to the replacement of terminating employees with new employees.

6. Normal Cost

That portion of the Actuarial Present Value of future benefits that is assigned to the current year.

7. <u>Unfunded Actuarial Accrued Liability</u>

That portion of the Actuarial Accrued Liability that is not provided for by current actuarial value of assets.

8. Valuation Method

The method used to divide the cost of future benefits among the Actuarial Accrued Liability, the current year's Normal Costs, and future years' Normal Costs. The resulting current funding requirement is then determined as the current year's Normal Cost plus the payment necessary to amortize the Unfunded Actuarial Liability.

9. <u>Vested Liability</u>

That portion of the Actuarial Present Value of Accrued Benefits that a member would be entitled to if the member terminated employment with the employer as of the valuation date.

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CERTIFICATION:

This report fairly represents the actuarial position of the City of Waltham Retirement System contributing as of January 1, 2015, in accordance with generally accepted actuarial principles applied consistently with the preceding valuation. In our opinion, the actuarial assumptions used to compute actuarial accrued liability and normal cost are reasonably related to plan experience and to reasonable expectations, and represents our best estimate of anticipated plan experience.

The funded status measure is appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations. The funded status measure is appropriate for assessing the need for or the amount of future contributions. The funded status measure would be different if the measure reflected the market value of assets rather than the actuarial value of assets.

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of our assignment, we did not perform an analysis of the potential range of such future measurements.

The report was prepared under the supervision of Daniel Sherman, an Associate of the Society of Actuaries and a Member of the American Academy of Actuaries, who takes responsibility for the overall appropriateness of the analysis, assumptions and results. Daniel Sherman is deemed to meet the General Qualification Standard and the basic education and experience requirement in the pension area. Based on over thirty years of performing valuations of similar complexity, Mr. Sherman is qualified by experience. Daniel Sherman has met the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion contained herein.

Sherman Actuarial Services, LLC

Daniel W. Therman

Daniel W. Sherman, ASA, MAAA

July, 2015